

# Resilient Autonomous Systems: Life-Cycle Design, Metrics and Simulation-Based Assessment, Phase I

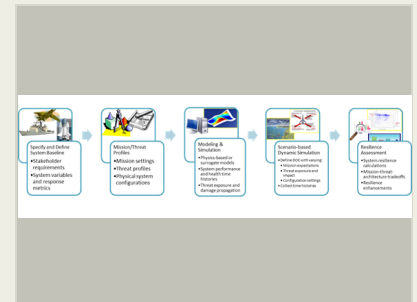
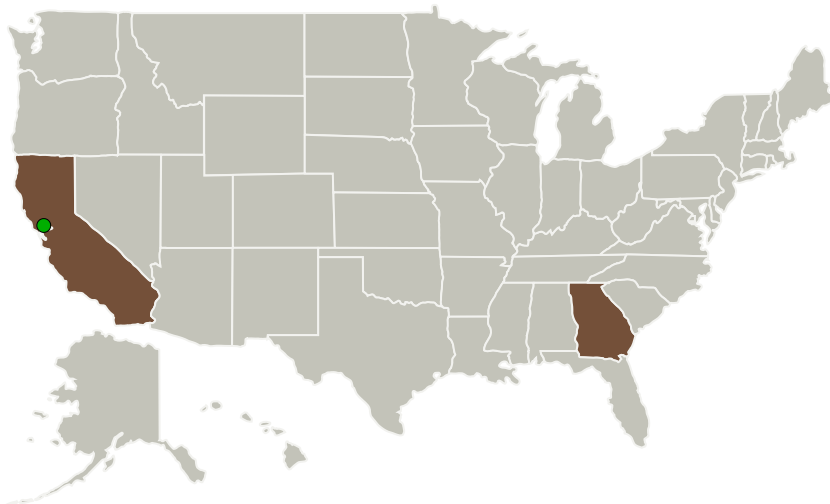
Completed Technology Project (2017 - 2017)



## Project Introduction

With more ambitious space exploration programs, which aggressively push the envelope beyond lunar missions, it is therefore projected that a shift in mission planning and system design is necessary for addressing this new breed of resiliency-oriented challenges. An opportunity exists to support the NASA in the development of a framework for the assessment and life-cycle design of more resilient autonomous space habitats. Global Technology Connection, Inc. (GTC), in collaboration with the Aerospace Systems Design Laboratory (ASDL) at the Georgia Institute of Technology (Georgia Tech), seeks to develop a state-of-the-art capability focused on providing an a resilience assessment framework, including a set of application-relevant metrics, analysis algorithms, as well as computational tools, which would demonstrate the modeling and simulation-based approach on design space exploration and optimization for a resilient SoS space habitat application. Overview of the analysis framework that will be leveraged and evolved to realize this opportunity has been discussed in detail in the proposal.

## Primary U.S. Work Locations and Key Partners



Resilient Autonomous Systems: Life-Cycle Design, Metrics and Simulation-based Assessment, Phase I Briefing Chart Image

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Organizations Performing Work	Role	Type	Location
Global Technology Connection Inc	Lead Organization	Industry Small Disadvantaged Business (SDB)	Atlanta, Georgia
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

## Primary U.S. Work Locations

California	Georgia
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## Images



## Briefing Chart Image

Resilient Autonomous Systems:  
Life-Cycle Design, Metrics and  
Simulation-based Assessment,  
Phase I Briefing Chart Image  
(<https://techport.nasa.gov/image/136160>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Global Technology Connection Inc

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

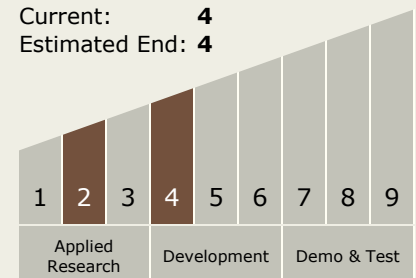
Carlos Torrez

**Principal Investigator:**

Ash B Thakker

## Technology Maturity (TRL)

Start: 2  
Current: 4  
Estimated End: 4



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## Technology Areas

### Primary:

- TX10 Autonomous Systems
  - └ TX10.2 Reasoning and Acting
    - └ TX10.2.4 Execution and Control

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System